TECHNOLOGY NEWS

Iowa's Local Technical Assistance Program (LTAP) : providing transportation technology transfer for Iowa's cities and counties

August–September 1999

Implements of husbandry— Just how much do they stress Iowa's roadways?

COLD, HARD DATA. That's what the Iowa legislature has asked for in regard to the effects of implements of husbandry—specifically, their axle weights—on Iowa's roadways.

The Center for Transportation Research and Education (CTRE) has contracted with the Iowa Department of Transportation (DOT) to provide such data to the General Assembly by January 1, 2000. CTRE will investigate the effects of grain carts and tank wagons on flexible and rigid pavements. CTRE will also determine how flotation tires or tracks on such implements affect the distribution of axle weights to the roadway.

Background

As the size of Iowa's farms has increased, so have the sizes and weights of implements of husbandry. Like tractor-trailers, today's multi-ton tractors and combines distribute their weight over multiple axles, minimizing their stress on roadways. Other

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Reports of the effects of implements of husbandry on Iowa's roadways vary widely.

(Top) For example, no significant wear is apparent on this section of roadway, even though a fully-loaded, 10,000-gallon, multiple-axle tank wagon has reportedly made more than 1,000 trips over it. (This view looks east in western Sioux County.)

(Below) On the other hand, 26 repair slabs were required on this half-mile section of roadway between a feedlot and a field over which a large, single-axle, dry manure spreader reportedly traveled often. (This view looks east in northern Sioux County.)

At the request of the Iowa legislature, the Iowa DOT is sponsoring research to measure the effects on Iowa's roadways that can be directly attributed to variously configured implements of husbandry.

Photos courtesy of Sixth District State Representative, David Johnson.

The preparation of this newsletter was financed through the Local Technical Assistance Program (LTAP). LTAP is a nationwide effort financed jointly in Iowa by the Federal Highway Administration and the Iowa Department of Transportation. The mission of Iowa's LTAP:

To foster a safe, efficient, environmentally sound transportation system by improving skills and knowledge of local transportation providers through training, technical assistance, and technology transfer, to improve the quality of life for Iowans.

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implements, however, which carry extremely heavy loads on one or two axles, may quickly stress pavements to failure. Some single- or tandem-axle implements carry loads well over the maximum axle weights allowed on commercial vehicles (20,000 pounds/single axle, 34,000 pounds/tandem axles). These include some grain carts and manure tank wagons.

In Iowa, implements of husbandry have traditionally been exempt from complying with posted weight embargoes on bridges or with regulations regarding axle-weight limitations on roadways. For the last several years state and county officials have worked together to communicate with the legislature, equipment manufacturers, and farmers about the dramatic impacts of some of these implements on Iowa's roads and bridges.

This year, with House File 651, the Iowa General Assembly initiated a phased program of weight restrictions for implements of husbandry. First, effective July 1, 1999, implements of husbandry must comply with weight restrictions posted on bridges. Second, grain carts, tank wagons, and fence-line feeders manufactured on or after July 1, 2001, must be within 20 percent of commercial vehicle axle-weight restrictions to travel legally on Iowa's roadways. Finally, all grain carts, tank wagons, and fence-line feeders must comply with these axle-weight restrictions by July 1, 2005.

The phase-in schedule for compliance with axle-weight restrictions gives equipment manufacturers and farmers time to respond to the new legislation. To help the legislature answer additional questions, HF 651 directed the Iowa DOT to conduct a study of the possible mitigating effects of flotation tires and tracks on the transfer of axle weights to the roadway.

The study

Ideally, such a study would involve testing loads on a variety of pavements, during all seasons, for several years. Such a long-term study is impossible under the legislature's timeline, so CTRE is conducting a limited project using field tests to validate analytical research.

In pavement technology, the reference design vehicle configuration for axle loads is an 18,000-pound, single-axle vehicle. Other axle configurations are expressed in terms of equal pavement wear, or "equivalent single-axle loads" (ESALs). Axle weight alone does not determine pavement wear; the configuration of the load (contact area or "footprint," tire pressure, suspension, and wheel spacing), as well as temperature, contributes decisively to ESALs.

For this study, basic modeling software will be used to analyze the response of given pavements (rigid and flexible, thick and thin, well supported and poorly supported) to specified applied loads on carts and wagons, some with and without flotation tires and/or tracks. The model will obtain strains, deflected shape, and other information. The results will be used to guide the field tests described below.

The response of each pavement to each vehicle configuration will be compared to the response to the standard ESAL. Conclusions will then be drawn about the relative effect of each type of vehicle on each type of pavement.

The approximate response of shoulders (limited to deformation in the vertical direction only) will be analyzed by examining very thin pavements under different loads. Although of great interest to counties, the response of gravel roads to various loads is beyond the scope of this study.

This analytic study will be validated by a field study. Test sections of two roadways under construction this fall, a portland cement concrete (PCC) road in Jones and Jackson counties and an asphalt cement concrete (ACC) road in Crawford County, will be instrumented with strain gages, thermocouples, and deflection-measuring plates.

The Jones-Jackson County road was instrumented in late August, and researchers hope to conduct tests in September. The Crawford County road will be instrumented and tested later in the season. Data will be collected using a high-speed, 16-bit data logger while vehicles are driven across the test sections at various velocities.

Legislators, manufacturers and distributors of implements of husbandry, agriculture association representatives, county engineers, and members of the Iowa State Association of Counties provided input regarding issues to be addressed in the research. A variety of these stakeholders are participating in the project. For example, Firestone Agricultural Tire Division (Des Moines, Iowa) is providing technical data about flotation tires. Eldon C. Stutsman, Inc. (Hills, Iowa), Kinze

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City of Manchester simplifies leaf cleanup

Thanks to Larry Schmidt, street superintendent for the City of Manchester, for tipping us off to this story when he sent in his reader survey this summer. (For a brief report on the reader survey, see page 12.)

OCTOBER is baling season in Manchester, Iowa. That's when the city's reconfigured hay stacker travels the streets, scooping up leaves raked there by residents and baling the leaves in large, loaf-shaped bundles for composting.

A couple years ago street superintendent Larry Schmidt and his crew adapted a rented hay stacker, intended for picking up and baling corn stalks and hay, to collect leaves. Their first modification involved clamping rubber skids underneath the stacker to pick up leaves. Eventually they replaced the skids with rubber gathering wheels mounted on the front of the stacker. Then they supplemented the scooping action of the rubber wheels by adding a flipper bar that kicks leaves under the stacker to enhance its intake capacity.

The redesigned stacker "gobbles up the leaves," Schmidt says. He is working on a patent application for the design modifications.

Schmidt estimates the modified stacker can compress eight or ten five-cubic-yard dump truck loads of leaves, maybe more, in each stack. The stacks are deposited at the city compost site, where they are mixed with other yard waste.

Schmidt's final design works so well that the City of Manchester has purchased its own hay stacker—a Heston Model 10 "Stack Hand"—just for leaf collection. Drawn by a tractor, the modified stacker replaces four dump trucks and two loaders that the city once required for leaf collection during the autumn. Leaf pickup operations are now accomplished by the stacker followed by a street sweeper, generating significant savings for the city and freeing other crew members and equipment for other city maintenance projects.

For more information contact Larry Schmidt, 319-927-4011. •

The City of Manchester's baler "gobbles up" leaves on the streets.

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Manufacturing, Inc. (Williamsburg, Iowa), and Balzer Inc. (Cedar Falls, Iowa) are providing equipment for the field tests.

For more information

For more information about the research, contact Fouad Fanous, professor of civil and construction engineering at Iowa State, 515-294-9416, fanous@iastate.edu; or Brian Coree, CTRE's materials engineer, 515-294-3973, bcoree@iastate.edu. •

Steeling against inclement weather

IT'S A TONGUE TWISTER, but Story County's maintenance crew takes it seriously: Their stainless steel salt and sand spreader is a shining new tool in the county's snow and ice-fighting arsenal.

Story County Maintenance Superintendent Jeff Biddle first encountered stainless steel spreaders during his 20-year tenure with the Iowa Department of Transportation. When he joined the Story County staff in 1996, the idea went with him. Now, stainless steel spreaders replace those made with mild steel.

"Longevity is the biggest benefit of stainless steel."

"Longevity is the biggest benefit of stainless steel," says Biddle. Salt and sand are hard on mild steel spreaders, even though they sport a coat of paint for added protection against chemicals. Stainless steel spreaders, however, are up to the challenge.

Other counties are also taking note of stainless steel's resistance to chemicals, especially as they consider employing brine systems for snow and ice control. As opposed to older control methods, which rely on moisture from snow to activate chemicals, brine solutions are activated before application, exposing spreaders to increased wear.

Biddle says there are only two significant differences between stainless steel and mild steel spreaders: durability and cost. He believes stainless steel's increased durability cancels out its higher cost. Biddle explains that the initial cost of stainless steel spreaders is "a bit more," but this cost is soon absorbed because the spreaders outlive more than one truck. In contrast, mild steel spreaders must be replaced frequently.

For more information, contact Jeff Biddle, 515-382-7364. •

Stainless steel spreaders generally outlive snow plow trucks, according to Jeff Biddle, Story County maintenance superintendent.

Useful web reading

GOT A STACK of transportation magazines on your desk? Reduce the paper shuffle! The following serial publications are available, all or in part, on-line:

www.betterroads.com/betterroads/
Better Roads Magazine's on-line version offers the latest news on transportation and traffic safety.

www.sgcpubs.com/roadsbridges.html
Roads & Bridges on-line covers national, state, and local transportation news and legislation.

www.pubworks.org/reporter/
The *APWA Reporter* on-line is published monthly and dedicated to public works projects and updates.

www.ota.fhwa.dot.gov/pubs/index.html
Focus is published monthly on-line and in print. Originally the newsletter for the Strategic Highway Research Program, the publication has expanded its mission to report on "innovative products and strategies for building better, safer roads."

www.gpsworld.com/article/features.htm#columns
GPS World Online publishes excerpts from its hard-copy version, a news magazine devoted to GPS applications in both public and private sectors.

www.transit-center.com/index.html
Metro Magazine's Transit Center includes news and classifieds for public transit agencies as well as answers to frequently asked questions about TEA-21.

www.ctre.iastate.edu/pubs/Tech_News/
Technology News, your Local Technical Assistance Program newsletter, is on-line at CTRE's web site. Find back issues, as well as LTAP newsletters from other states. •

On the road: recycled asphalt shingles

SEVERAL MILLION TONS of used or waste roofing material end up in the nation's landfills each year, with Iowa alone contributing 130,000 tons to the pile. Iowa Department of Transportation (Iowa DOT) researchers estimate that 20 to 40 percent of the material in asphalt roofing shingles is liquid asphalt, and the remaining material consists of sand and other binding materials. Used or waste asphalt shingles are therefore prime candidates for recovery and reuse in roadway projects. Options for recycling shingles include melting them for crack filling asphalt pavements, and using ground shingles as a cold mix for dust control.

Iowa DOT tests of bituminous shingles demonstrate that their asbestos content is extremely low, typically two to three percent. The little asbestos present is generally encapsulated in asphalt cement, so crushing the shingles does not produce dangerous asbestos dust.

A 1995 abstract issued by Robert F. Steffes, Iowa DOT assistant research engineer, and Shane Tymkowicz, secondary road research coordinator, discussed an initial field test sponsored by the Iowa Highway Research Board (HR-207). The study evaluated the use of ground, recycled asphalt shingles for hot-pour crack filling in Spencer, Iowa. At that time, the authors stated that initial results were very encouraging; for a variety of reasons, however, the study was not completed.

The same year in Benton County, ground asphalt shingles were cold mixed on a quarter-mile stretch of roadway for dust control purposes. The ground shingles were spread on top of a crushed limestone surface and bladed to mix with the limestone, resulting in a surface of equal volume shingles and limestone. A year later, the "shingled" roadway remained nearly dust-free and workable. Two years after the initial application, the county had collected enough waste shingles to apply the dust control method to two more miles of roadway.

Benton County Engineer Myron Parizek says that visual inspection of the project revealed "much different dust patterns. Instead of that big, rolling ball of dust that's kicked up by limestone, the dust from the asphalt mix doesn't roll."

"Our biggest obstacle is getting the nails out of the asphalt materials," Parizek adds. "But each year the party who grinds the shingles has improved the methods for removing nails." Parizek explains that hanging long bar magnets from maintenance vehicles also helps to remove nails from the roadway mix.

Dallas County has also joined the recycling movement. Recycled shingles are being used as dust control on three miles of bypass roadway this summer. Having witnessed the duration of Benton County's dust control measures, Dallas County Engineer Jim George hopes that his county will experience similar success, consequently balancing out the project's expense over several years.

"The total cost of processing the shingles, hauling them for 25 miles from Des Moines, and applying them is around $11,000 per mile, while the material used in more traditional dust control, such as calcium or tree sap, runs around $1,500 per mile," George explains. He adds that a county can avoid some of the expense by establishing its own recycling center rather than trucking the materials from a distant location.

Ground shingle material may be an effective substitute for aggregate in asphalt paving mix and has in fact been used for this purpose in trials in Nevada, Minnesota, Nova Scotia, and elsewhere. Mark Dunn, research engineer at the Iowa DOT, says the department is tentatively planning to produce an experimental lab pavement mix using recycled asphalt shingles. The mix will conform to Superpave standards, which limit recycled materials to no more than 10 percent of the mix.

For more information contact Mark Dunn, 515-239-1447; Jim George, 515-993-4289; or Myron Parizek, 319-472-2211. •

Recycled asphalt shingles have been helpful in the battle to control roadway dust.

Spin your web: helping users navigate your site

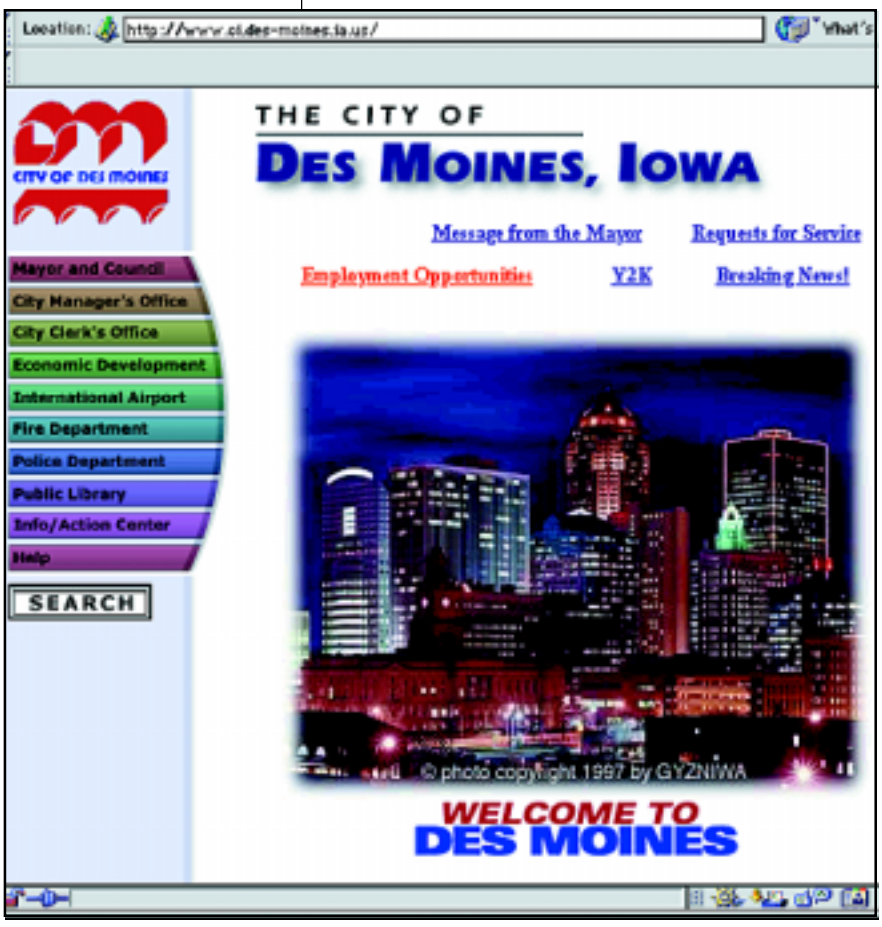
This is the fourth article in a series about web site development for local transportation agencies. The first three articles covered planning a web site, acquiring the tools for creating it, and choosing and organizing content.

CHOOSING AND ORGANIZING content for a web site is a big job. To make sure the visitors to your site appreciate what a great job you've done, you need to label things clearly and well, and provide an easy way for visitors to navigate your pages.

What are good labels?

- Labels are the names you give to sections of your site and to links within it. See the City of Des Moines web page below. Clicking on the "City Clerk's Office" button, an example of a link label, will take you to a page with the same label. Labels are part of a whole labeling system that should be consistent throughout your site.
- Good labels are specific and descriptive from *the perspective of the site's users*. "Employment Opportunities" and "Breaking News!" are specific, descriptive labels that visitors to your site would readily understand. "Engineering Division" may be meaningful to people in your agency, but it doesn't tell outsiders much. Would that link allow users to contact the engineering division or learn more about what the engineering division does? Ambiguous labels can generate confusion, which doesn't help create a positive impression about a site.

The City of Des Moines's web site presents a good example of a clear, consistent navigation system.



Problem labels

One great thing about the World Wide Web is how much we can learn (and borrow) from other sites' strengths and weaknesses. One metropolitan public works department we found has developed a well organized site chock-full of helpful content for its public. Some labels, however, are a little confusing.

For example, the label "Index" on the department's main page sets up specific web user expectations—mainly that the index is an alphabetical listing of main topics or ideas within the department's web site.

But the index doesn't fit users' expectations because it is neither alphabetical nor a consistent listing of main topics. At the time of this writing, the index looked like this:

Mission/Vision Statement
Services at a Glance
Street Closings
[___] Road EIS Executive Summary
Snow Emergency Info
Recycling
Other Public Works
[___] Bridge Opening
News
Director's Greeting
Street Construction

If the list were alphabetical, two related ideas such as "Street Closings" and "Street Construction" would be next to each other in the list.

As to the link labels themselves, some are specific and descriptive, giving users a clear idea of where the link will take them. "Snow Emergency Info" and "Director's Greeting" are two examples.

Other labels are more ambiguous. The bridge opening sounds like a news item. Will the general public

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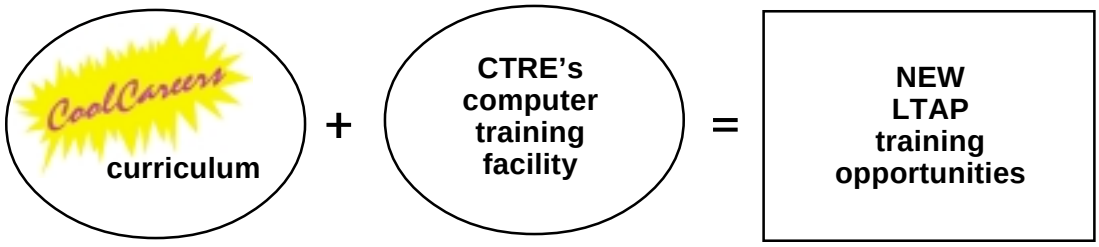
New training opportunities through Iowa LTAP

Duane Smith, Associate Director of Outreach



TWO IMPORTANT ITEMS have come together at Iowa's Local Technical Assistance Program (LTAP) center that will ultimately support exciting new training opportunities for local governments.

The first item is the completion of an intensive three-month training program for new transportation technicians—Cool Careers—which was sponsored by the Iowa Department of Transportation (Iowa DOT) and facilitated by Iowa LTAP. During the summer, trainees took 40 hours of classes each week at Iowa State University.

The second item is a new computer training lab at the Center for Transportation Research and

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know what an EIS executive summary is? "Other Public Works" is also unclear; the link takes you to a list of national organization's web sites rather than nearby cities' public works departments, as users might guess.

Even when you think your labels make perfect sense and can't be misunderstood, it may help to get some feedback on them, especially from people outside your agency.

Navigation systems

A user dealing with ambiguous labels will have problems navigating the site. Effective labeling systems work together with navigation systems to help users develop a mental map of a site so they can find the information they're seeking.

A popular and useful method of helping users get around a site is a navigation bar. A navigation bar is a set of related links that presents the basic information hierarchy of a site. Using navigation bars consistently throughout your pages helps users understand where they are and where they can go from there.

The City of Des Moines's web site (*www.ci.des-moines.ia.us/*) uses graphic and textual navigation bars to show users the main categories of information that can be linked from a given page. For example, clicking "Mayor and Council" on the home page will take you to a page with a photo of the mayor and city council and another navigation bar with links such as "Leave a Message," "Meeting Agendas/Info," and "Request to Speak."

The navigation bar on the "Mayor and Council" page is a completely new set of links. Each link in this bar is the same color as the "Mayor and Council" button on the home page. This color consistency is a subtle hint to users that all the links with the same color are related.

The graphic navigation bars are repeated as simple text links at the bottom of each page. This kind of redundant navigation system is helpful for a couple of reasons: 1) users who have graphics turned off in their browsers can still get around the site, and 2) visually impaired users who have screen readers to read aloud the contents of a web page also have full access to the site.

No matter who designs your site—someone in-house or an outside professional—your inside knowledge and input about the consistency, and especially the *specificity,* of labels and navigation systems will make all the difference to the user friendliness of your site.

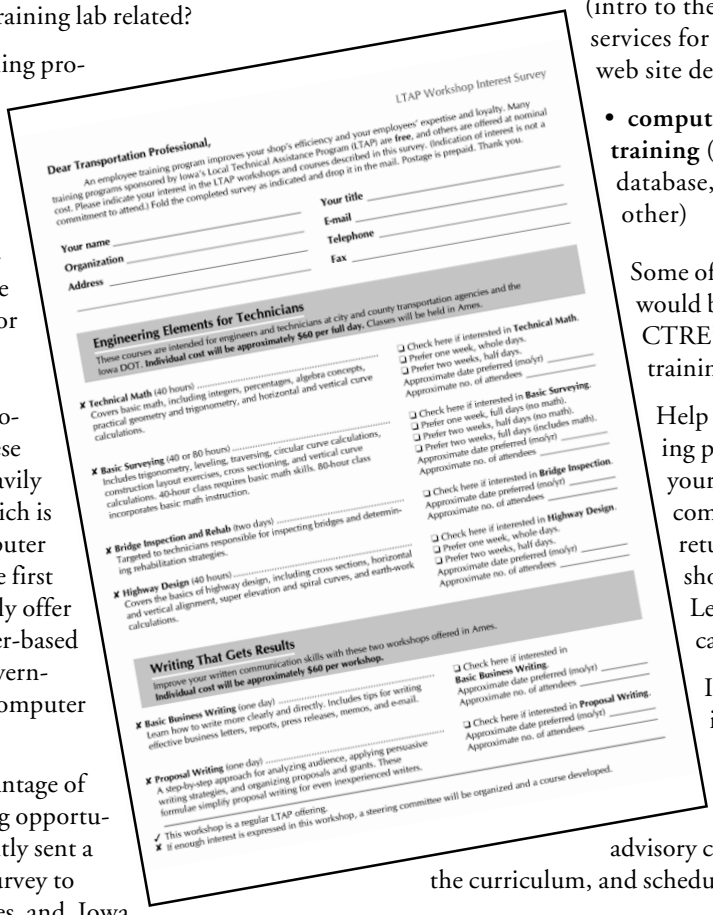
The next article in this series will discuss web site design. •

TRAINING. . . ***continued from page 7***

Education (CTRE), the home of Iowa's LTAP. The lab is equipped with 20 Gateway workstations and can accommodate up to 40 students at a time for hands-on training.

How are the technician training program and CTRE's computer training lab related?

The technician training program provides a framework of new training modules that can easily be adapted for local transportation agencies. For example, we now have modules for math fundamentals, roadway design, surveying, and MicroStation. Some of these new modules are heavily computer based, which is where the new computer lab comes in. For the first time, we can regularly offer convenient computer-based training for local governments via CTRE's computer training lab.



LTAP Workshop Interest Survey

Dear Transportation Professional,

An employee training program improves your shop's efficiency and your employees' expertise and loyalty. Many training programs sponsored by Iowa's Local Technical Assistance Program (LTAP) are **free**, and others are offered at nominal cost. Please indicate your interest in the LTAP workshops and courses described in this survey. (Indication of interest is not a commitment to attend.) Fold the completed survey as indicated and drop it in the mail. Postage is prepaid. Thank you.

Your name _____ **Your title** _____
Organization _____ **E-mail** _____
Address _____ **Telephone** _____
Fax _____

Engineering Elements for Technicians

These courses are intended for engineers and technicians at city and county transportation agencies and the Iowa DOT. **Individual cost will be approximately $60 per full day.** Classes will be held in Ames.

✘ **Technical Math** (40 hours) ..... Covers basic math, including integers, percentages, algebra concepts, practical geometry and trigonometry, and horizontal and vertical curve calculations.
❑ Check here if interested in **Technical Math**.
❑ Prefer one week, whole days.
❑ Prefer two weeks, half days.
Approximate date preferred (mo/yr) _____
Approximate no. of attendees _____

✘ **Basic Surveying** (40 or 80 hours) ..... Includes trigonometry, leveling, traversing, circular curve calculations, construction layout exercises, cross sectioning, and vertical curve calculations. 40-hour class requires basic math skills. 80-hour class incorporates basic math instruction.
❑ Check here if interested in **Basic Surveying**.
❑ Prefer one week, full days (no math).
❑ Prefer two weeks, half days (no math).
❑ Prefer two weeks, full days (includes math).
Approximate date preferred (mo/yr) _____
Approximate no. of attendees _____

✘ **Bridge Inspection and Rehab** (two days) ..... Targeted to technicians responsible for inspecting bridges and determining rehabilitation strategies.
❑ Check here if interested in **Bridge Inspection**.
Approximate date preferred (mo/yr) _____
Approximate no. of attendees _____

✘ **Highway Design** (40 hours) ..... Covers the basics of highway design, including cross sections, horizontal and vertical alignment, super elevation and spiral curves, and earthwork calculations.
❑ Check here if interested in **Highway Design**.
❑ Prefer one week, whole days.
❑ Prefer two weeks, half days.
Approximate date preferred (mo/yr) _____
Approximate no. of attendees _____

Writing That Gets Results

Improve your written communication skills with these two workshops offered in Ames. **Individual cost will be approximately $60 per workshop.**

✘ **Basic Business Writing** (one day) ..... Learn how to write more clearly and directly. Includes tips for writing effective business letters, reports, press releases, memos, and e-mail.
❑ Check here if interested in **Basic Business Writing**.
Approximate date preferred (mo/yr) _____
Approximate no. of attendees _____

✘ **Proposal Writing** (one day) ..... A step-by-step approach for analyzing audience, applying persuasive writing strategies, and organizing proposals and grants. These formulae simplify proposal writing for even inexperienced writers.
❑ Check here if interested in **Proposal Writing**.
Approximate date preferred (mo/yr) _____
Approximate no. of attendees _____

✓ This workshop is a regular LTAP offering.
✘ If enough interest is expressed in this workshop, a steering committee will be organized and a course developed.

To help us take advantage of these unique training opportunities, we have recently sent a workshop interest survey to Iowa's local agencies and Iowa DOT shops. The survey describes possible workshop offerings for the upcoming year. These include tried-and-true safety workshops, many of which can be brought to your shop. Other possibilities include new modules from the technician training program.

Categories of workshops described on the survey include

- **engineering elements for technicians** (math, surveying bridge inspection, highway design)
- **writing that gets results** (business writing, proposal writing)
- **safety training for local governments** (flagger training, signing practices, roadside design, chain saw/excavation/backhoe safety, traffic calming, ALAS)
- **World Wide Web for transportation personnel** (intro to the web, web-based services for county engineers, web site development)
- **computer applications training** (word processing, database, GIS, CAD, other)

Some of these workshops would be offered in CTRE's new computer training lab in Ames.

Help us tailor our training program to meet your agency's needs by completing and returning the workshop interest survey. Let us know what we can do for *you*.

If survey responses indicate sufficient interest in a new topic, we will assemble an advisory committee, design the curriculum, and schedule the course.

If you need a survey, contact Georgia Parham, LTAP secretary, 515-294-8103; georgia@ctre.iastate.edu. Or you can download the survey from CTRE's web site, *www.ctre.iastate.edu/*. •

Iowa's LTAP has new home

THE BOXES ARE UNPACKED, the computers reconnected, the library reorganized and improved. Iowa's Local Technical Assistance Program (LTAP), housed in the Center for Transportation Research and Education, has moved.

We're still located in Iowa State University's Research Park south of Highway 30 in Ames. We just picked up our gear and moved across Airport Road to a brand new building on South Loop Drive. The move gives us more space for conducting workshops (we now have an in-house computer training lab and a videoconferencing classroom) and more parking space for workshop attendees and visitors to our transportation library.

Only our address is new; telephone numbers and web and e-mail addresses remain the same.

Center for Transportation
Research and Education
Iowa State University Research Park
2901 South Loop Drive, Suite 3100
Ames, Iowa 50010-8632
515-294-8103 (voice)
515-294-0467 (fax)
www.ctre.iastate.edu/

Stop by and see us when you're in Ames. Iowa's LTAP center is here to serve *you*. •

Iowa's LTAP crew, from left to right:

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Marcia Brink
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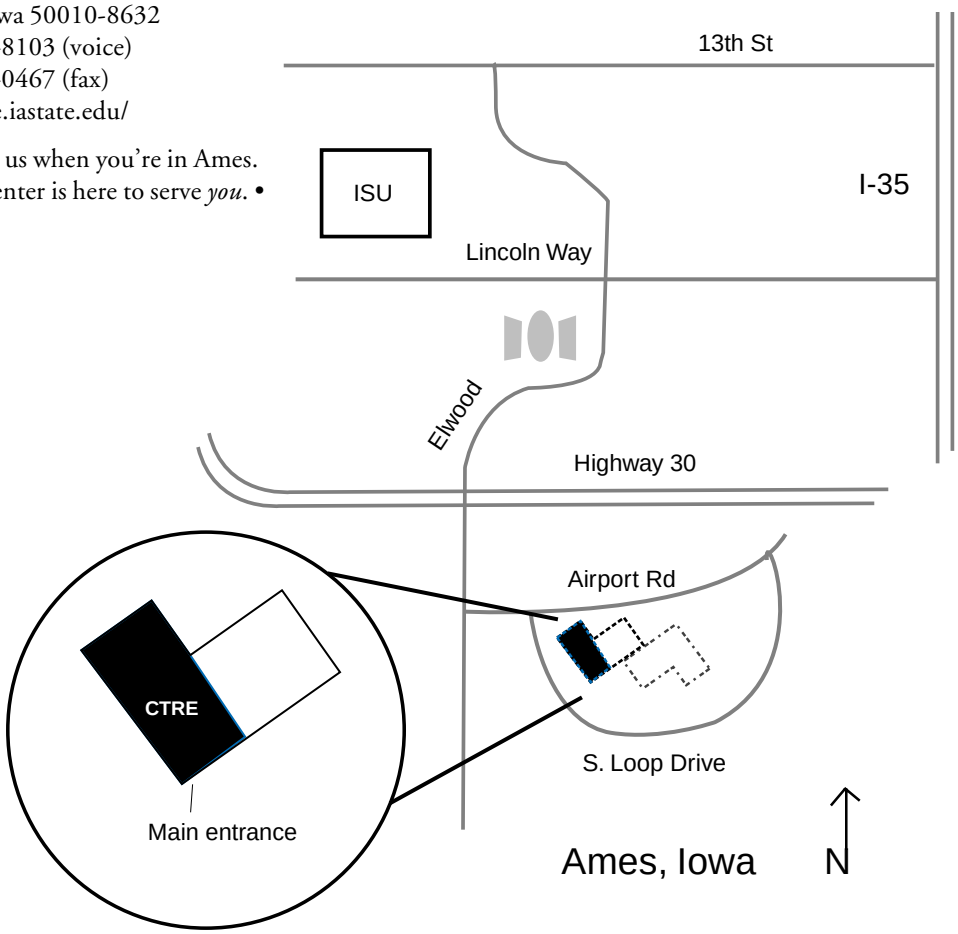
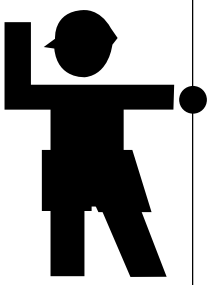


safety shorts

New size, reflectivity requirements for street signs

by Tom McDonald, Safety Circuit Rider



ATTENTION cities and counties responsible for maintaining street-name signs, including those commonly called "911" signs: Just a reminder that Federal Highway Administration rules now include new minimum size and reflectivity requirements for these signs.

Section 2D-39 of the Manual on Uniform Traffic Control Devices (MUTCD) now recommends a minimum of six inches in height for uppercase letters, four and a half inches for lowercase letters, and three inches for street abbreviations or city sections.

These minimum size requirements apply to street-name signs on any streets or roads with speed limits greater than 25 mph. For lower-speed streets, the option remains to use four-inch uppercase lettering on street-name signs.

Additionally, in the future all street-name signs must be retroreflectorized.

These changes don't become effective until January 2012, allowing sufficient time to correct any current signing deficiencies during your normal sign replacement cycle. Whenever you replace any street or road signs, take the new FHWA requirements into consideration. •

tip from the field

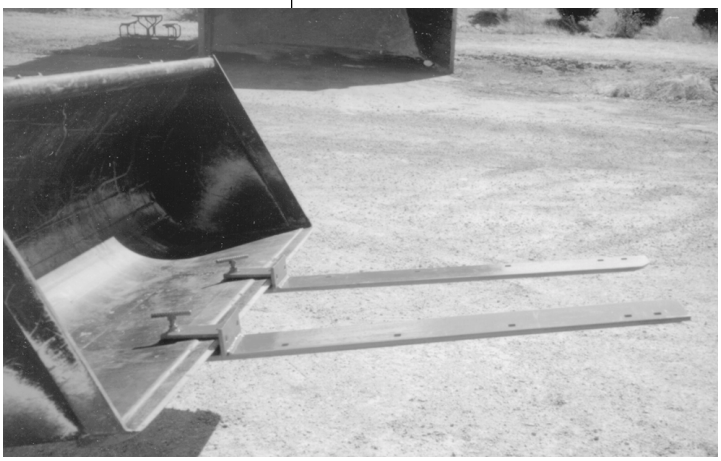
Handmade forks do heavy lifting

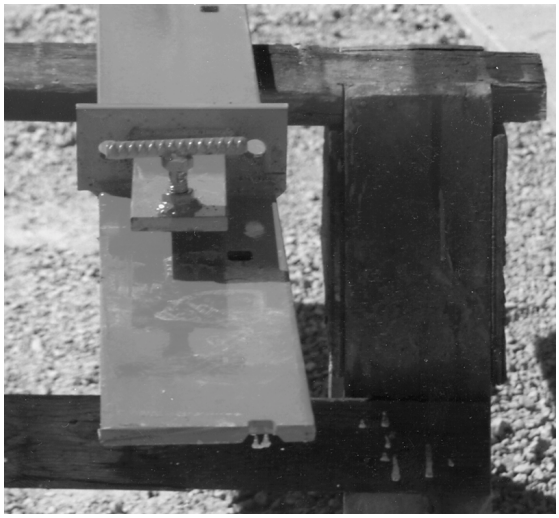
STEVE DRISCOLL, the building and grounds supervisor for the City of Asbury's public works department, developed a simple tool to do heavy lifting. He created handmade forks for a tractor loader bucket.

The forks are made of worn-out snow plow cutting edges from 11- and 8-foot plows. The two sizes are welded together for strength. The forks slip under the edge of the bucket and tighten down from the top. They are adjustable to any width.

The forks save the public works department valuable time and help prevent back strain among employees. Driscoll says, "We can now carry loads of lumber, steel pipe, road sign posts, picnic tables, and many other items. This project cost us nothing but the time it took to weld them together."

For more information about the forks, contact Steve Driscoll, 319-556-6410. •





conference calendar

September 1999

9–10	Iowa Section ASCE Annual Meeting	Ames	Duane Smith 515-294-8103
27–29	Iowa Winter Maintenance Expo and Snow Plow/Motor Grader "Roadeos"	Ames	Duane Smith 515-294-8103

October 1999

6–8	Iowa League of Cities Annual Conference and Expo Annual Conference and Expo	Sioux City	Jim Cable 515-294-2862 jkcable@iastate.edu
12–13	Airport Conference (Iowa State University Extended and Continuing Education)	Waterloo	515-294-6222 800-262-0015
19	Hazardous Materials Management at the County Level	Ames	Tom McDonald 515-294-8103
20	ASCE/ICEA Surveying Conference	Ames	Jim Cable 515-294-2862 jkcable@iastate.edu
20–21	Iowa Secondary Roads Maintenance Supervisors Association Annual Conference	Ames	Duane Smith 515-294-8103
20–21	ASCE/ICEA Surveying Conference	Ames	Jim Cable 515-294-2862 jkcable@iastate.edu
21–22	ITCSA Fall Conference	Ames	Tom McDonald 515-294-8103
27	Short Span Steel Bridge Design	Ames	Jim Cable 515-294-2862 jkcable@iastate.edu
28	Culvert Design	Ames	Jim Cable 515-294-2862 jkcable@iastate.edu

Iowa winter expo and "roadeos"

Iowa Winter Training Expo
September 27–28, 1999
Scheman Building/Hilton Coliseum
Iowa State University, Ames, Iowa

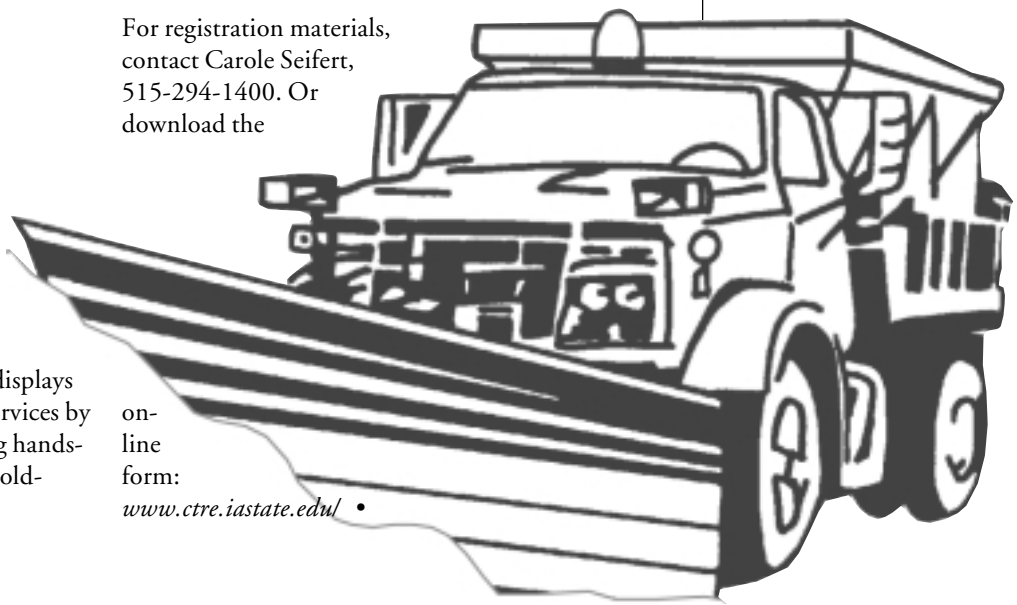
10th Annual Iowa Snow Plow Roadeo
2nd Annual Motor Grader Roadeo
September 29, 1999
Scheman Building Parking Lot
Iowa State University, Ames, Iowa

CITY, COUNTY, AND STATE winter maintenance personnel: these events are for *you*.

Expo participants will select from 16 sessions on chemicals and abrasives, anti-icing strategies, weather forecasts, snow removal equipment, customer service, and overseas winter operations. They will view displays of technology, equipment, materials, and services by vendors from around the country, including hands-on demonstrations. They will also enjoy an old-fashioned hog roast and social.

Roadeo contestants will challenge their ability to maneuver a snow plow and/or grader. This year the grader roadeo will be judged and awards given. It requires frame and moldboard positioning that simulates the many different job requirements operators face daily.

For registration materials, contact Carole Seifert, 515-294-1400. Or download the on-line form: *www.ctre.iastate.edu/* •



interesting & informative!

Thank you

I find many of the articles very interesting

it gives a lot of people a lot of information

I appreciate receiving the issues

Thank you

Keep up the good work

Very informative.

years of valuable information!

Thanks for all the issues I received!

Reader survey responses help save your LTAP dollars

READERS RESPONDED in droves to a recent *Technology News* survey. Thanks to the heavy response, particularly about address changes and deletions, Iowa's Local Technical Assistance Program (LTAP) has corrected dozens of inaccurate addresses on the *Technology News* mail list. We've also trimmed the list by several hundred names. The savings in printing and postage costs for each issue will provide more LTAP services for you, our customers.

Respondents who wanted addresses deleted generally gave one of three reasons: (1) the address was a duplicate, (2) they have changed jobs and no longer work in the transportation field, or (3) they are retired.

Several survey respondents provided suggestions for future articles. If you sent a suggestion with your survey, thank you; we will be contacting you soon for more information.

We also learned that respondents prefer, approximately three to one, the catalog-insert format of our lists of new library acquisitions. We appreciate your feedback, and we'll continue the new format.

Thanks to readers who helped us streamline our mail list. We also appreciate your comments and suggestions; they help us serve you better. •

Update your mailing address

☐ Please *add* the following name/address to the *Technology News* mail list.

☐ Please *correct* the name and/or address below on the *Technology News* mail list.

New or corrected mailing information:

Name _____

Title _____

Address _____

City/State/Zip _____

Organization _____

☐ Please delete the name/address below from the *Technology News* mail list.

To make a change to the *Technology News* mail list, please complete the information at left and mail this *entire page* (including mailing label) to the address below.

Thank you!

P486-0524

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